AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Original) A method of forming a microcrystalline thin film, comprising:

supplying, during a first process, a first gas and a second gas to a chamber in which a substrate is located;

supplying, during a second process, the second gas but not the first gas to the chamber; and

performing the first process and second process a plurality of times to form the microcrystalline thin film on the substrate.

2. (Original) The method of claim 1, wherein supplying the first gas comprises supplying SiH_4, and supplying the second gas comprises supplying H_2.

3. (Original) The method of claim 2, wherein performing the first process and second process a plurality of times is performed without removing the substrate from the chamber.

4. (Original) The method of claim 3, further comprising applying an electric field in the chamber to break down the SiH_4 to SiH_2.

5. (Original) The method of claim 4, wherein supplying the H_2 comprises supplying the H_2 at a generally constant rate, and wherein supplying the SiH_4 comprises supplying the SiH_3 at a first rate during the first process but not supplying the SiH_4 during the second process.

6. (Original) The method of claim 4, further comprising depositing the SiH_2 to a surface of the substrate during the second process.

7. (Original) The method of claim 1, further comprising:

converting the first gas to a third gas; and

depositing the third gas on the substrate during the second process.

8. (Original) The method of claim 7, wherein depositing the third gas on the substrate during the second process without supplying the first gas reduces formation of a polymer of the third gas prior to depositing of the third gas on the substrate.

9. (Original) A method of forming a microcrystalline thin film by activating a first source gas containing an element that forms a polymer when a plurality of molecules of the element are bonded in a vapor phase, and forming a film having a microcrystalline structure primarily composed of said element on a film forming target object, the method further comprising:

performing a source supplying process in which said first source gas is supplied, and

performing a source depositing process in which the supply of said first source gas is stopped and said activated first source gas is deposited on the film forming target object.

10. (Original) The method of claim 9, wherein bonding of the activated first source gas is suppressed in the source depositing process.

11. (Original) The method of forming a microcrystalline thin film of claim 9, wherein a second source gas that does not form a polymer when bonding with itself in the vapor phase is supplied in said source supplying process and said source depositing process.

12. (Original) The method of forming a microcrystalline thin film of claim 11, wherein the second source gas is supplied at a constant flow rate throughout said source supplying process and said source depositing process.

13. (Original) The method of forming a microcrystalline thin film of claim 11, wherein a flow rate ratio, r, of said first source gas and said second source gas satisfies $r \geq -(7/12)xP+72.5$, where P is an electric field intensity density irradiated on said first source gas and said second source gas.

14. (Original) The method of forming a microcrystalline thin film of claim 9, wherein performing said source supplying process comprises performing the source supplying process for 2 seconds or less, and performing said source depositing process comprises performing said source depositing process for longer than said source supplying process.

15. (Original) The method of forming a microcrystalline thin film of claim 11, wherein said first source gas contains SiH_4 and said second source gas contains H_2.

16. (Original) The method of forming a microcrystalline thin film of claim 11, wherein SiH_4 contained in said first source gas is broken down to SiH_2 at activation.

17. (Original) A method of manufacturing a thin film transistor comprising:

forming a gate electrode on the substrate;

forming an insulation layer film on said substrate and said gate electrode,

forming at least a portion of a channel layer film on said insulation layer by using the microcrystalline thin film forming method of claim 9; and

forming a source/drain electrode on said channel layer.

18. (Original) The method of manufacturing a thin film transistor of claim 17, wherein forming the channel layer film comprises forming the microcrystalline thin film at least up to 1 nm away into the channel layer film from the interface with said insulation layer.

19. (Withdrawn) An image display apparatus having an array substrate comprising:

a pixel electrode corresponding to a display pixel;

a switching element coupled to the pixel electrode, said switching element comprising the thin film transistor of claim 17;

a signal line to supply a display signal through said switching element to the pixel electrode; and

a scanning line to supply the scanning signal to control a drive status of said switching element.

20. (Withdrawn) The image display apparatus of claim 19, wherein said switching element is formed by a plurality of the thin film transistors.

21. (Withdrawn) An image display apparatus having an array substrate, said array substrate comprising:

a signal line to supply a display signal;

a scanning line to supply a scanning signal;

a first pixel electrode and second pixel electrode to which the display signal is provided;

a first switching element between the signal line and said first pixel electrode, said first switching element having a gate electrode to control supply of said display signal,

a second switching element placed between the scanning line and said gate electrode of said first switching element; and

a third switching element connected to said signal line, to control the supply of said display signal to said second pixel electrode.

22. (Withdrawn) An image display apparatus comprising:

a light emitting element corresponding to a display pixel, a light emitting status of the light emitting element being controlled by injected current;

a first thin film transistor to control the current value flowing into said light emitting element;

a second thin film transistor to control a gate potential of said first thin film transistor;

a capacitor to retain the gate potential of said first thin film transistor;

a signal line to supply a display signal;

a scanning line to supply the scanning signal to control the drive status of said second thin film transistor; and

a power supply line to supply current through said first thin film transistor to said light emitting element,

wherein at least one of said first thin film transistor and said second thin film transistor is the thin film transistor of claim 17.

23. (Withdrawn) The image display apparatus of claim 21, wherein said light emitting element is an organic EL element having a light emitting layer formed with an organic material, and said light emitting element is connected to the source/drain electrode of said first thin film transistor.

24. (Withdrawn) A thin film transistor, comprising:

a gate electrode;

a source electrode and drain electrode;

a channel layer disposed between the source electrode and the drain electrode, wherein at least a portion of the channel layer is made of a microcrystalline silicon thin film wherein a number of hydrogen-silicon dangling bonds is less than a number of silicon-silicon dangling bonds; and

an insulating layer disposed between the gate electrode and the channel layer.

25. (Withdrawn) A thin film transistor, comprising:

a gate electrode;

a source electrode and drain electrode;

a channel layer disposed between the source electrode and the drain electrode, wherein at least a portion of the channel layer is made of a microcrystalline silicon thin film having a number of dangling bonds to provide a mobility of the microcrystalline silicon thin film to be higher than about $0.7cm^2/Vs$; and

an insulating layer disposed between the gate electrode and the channel layer.